Claims

[c1]

Having thus described the invention, what is claimed as new and useful and is desired to be secured by U.S. Letter Patent is:

A nasal cannula assembly designed for contact with the nasalabidial area of a patient's nose and comprising:

a hollow tubular member having an opening at each end, said tubular member having a central portion of sufficient length to span the width of an average patient's nostrils and end portions extending from each end of said central portion, said central portion having a pair of spaced, hollow extensions integral with and projecting therefrom said hollow extensions terminating in gas directing orifices and which hollow portion of said extensions communicate with said hollow main body portion,

said central portion lying in a first plane with longitudinal axes symmetrical about the midpoint and forming an angle in said first plane less than 180 degrees,

each said hollow extension having a longitudinal axis projecting from said central portion at an acute angle from said first plane, said gas directing orifices of said hollow extensions having a longitudinal axis lying in a second plane essentially parallel to and displaced from said first plane,

said end portions of said central portion lying in essentially the first plane with longitudinal axis of said end portion essentially collinear with longitudinal axis of corresponding symmetrical half of said central portion.

[c2]

A nasal cannula assembly as recited in claim 1, wherein said hollow extensions terminate in said gas directing orifices where thickness of material forming rim of said orifices is less than .006 inches.

[c3]

A nasal cannula assembly as recited in claim 1, wherein longitudinal axis of each said gas directing orifice angled acutely in said second plane toward second said gas directing orifice.

[c4]

A nasal cannula assembly designed for contact with the nasalabidial area of a patient's nose and comprising:

a hollow tubular member having a central portion of sufficient length to span the width of an average patient's nostrils and end portions with openings of a diameter to receive support tubing,

a pair of spaced hollow extensions communicating with the interior of said tubular member and extending away from the member for directing fluid into the nostrils of the patient and/or receiving gas or pressure variations from the nostrils of the patient;

flexible support tube fitted to open end of each said end portion.

[c5]

A nasal cannula assembly as recited in claim 4 wherein said support tubes have a hardness between 40 and 75 Shore A.

[c6]

A nasal cannula assembly as recited in claim 4 wherein said support tubes have a compression set less than 45% at 23 degrees C per ASTM D-395.

[c7]

A nasal cannula assembly as recited in claim 4 wherein said support tubes have a brittle temperature less than -40 degrees C per ASTM D-746.

[c8]

A nasal cannula assembly as recited in claim 4 wherein said support tubes have a 10% tensile modulus less than 200 psi.

[c9]

A nasal cannula assembly as recited in claim 4 wherein said support tubes are manufactured from a polyvinyl chloride compound comprising at least a portion of polyvinyl chloride resin having an average molecular weight of at least about 100,000.

[c10]

A nasal cannula assembly designed for contact with the nasalabidial area of a patient's nose and comprising:

a hollow tubular member having an opening at each end, said tubular member having a central portion of sufficient length to span the width of an average patient's nostrils and end portions extending from each end of said central portion, said central portion having a pair of spaced, hollow extensions integral with and projecting therefrom said extensions terminating in gas directing orifices and which hollow portion of said extensions communicate with said hollow main body portion,

a pair of spaced hollow extensions communicating with the interior of said tubular member and extending away from the member for directing fluid into the nostrils of the patient and/or receiving gas or pressure variations from the nostrils of the patient,

open end of each said end portion accepting support tubes,

each said support tube having an opposite open end affixed to a common coupling with hollow interior communicating with both said support tubes,

said coupling having a third opening communicating with said hollow interior and accepting open end of a flexible main supply tube.

[c11] A nasal cannula assembly as recited in claim 10 wherein main supply tube has a hardness between 40 and 75 Shore A.

[c12] A nasal cannula assembly as recited in claim 10 wherein main supply tube has a compression set less than 45% at 23 degrees C per ASTM D-395.

[c13] A nasal cannula assembly as recited in claim 10 wherein main supply tube has a brittle temperature less than -40 degrees C per ASTM D-746.

[c14] A nasal cannula assembly as recited in claim 10 wherein main supply tube has a 10% tensile modulus less than 200 psi.

[c15] A nasal cannula assembly as recited in claim 10 wherein main supply tube is manufactured from a polyvinyl chloride compound comprising at least a portion of polyvinyl chloride resin having an average molecular weight of at least about 100,000.

[c16] A length of extension tubing with suitable connectors at both ends;

one said pliable connector in communication with a nasal cannula assembly connected thereon to receive or transmit gas and/or signals,

second said pliable connector in communication with a source of gas and/or sensing device,

[c17] Extension tubing recited in claim 16 having a 10% tensile modulus less than 200 psi.

[c18] Extension tubing recited in claim 16 having a compression set less than 45% at 23 degrees C per ASTM D-395.

[c19] Extension tubing recited in claim 16 manufactured from a polyvinyl chloride compound comprising at least a portion of high molecular weight polyvinyl chloride resin wherein the high molecular weight polyvinyl chloride has an average molecular weight of at least about 100,000.